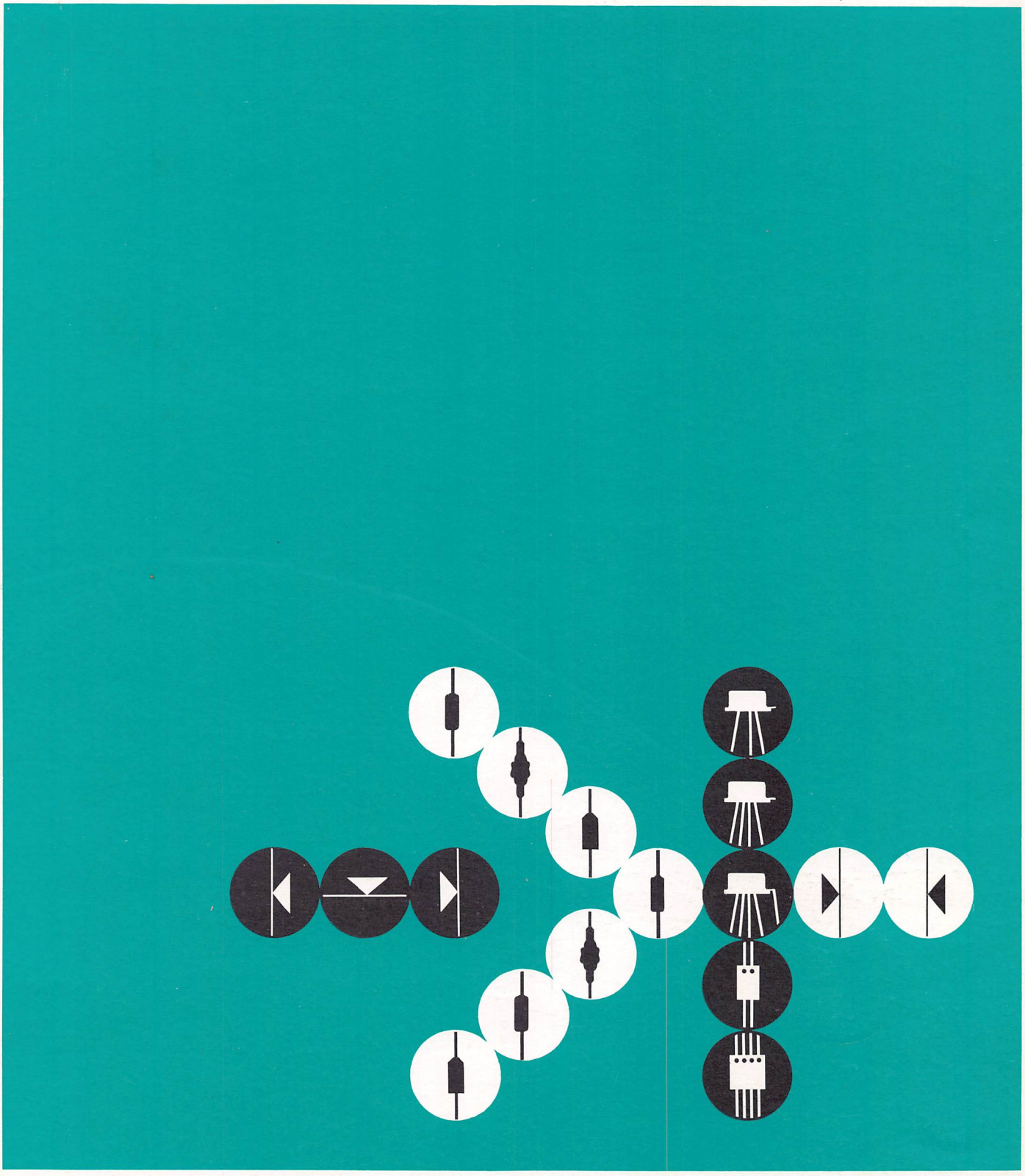
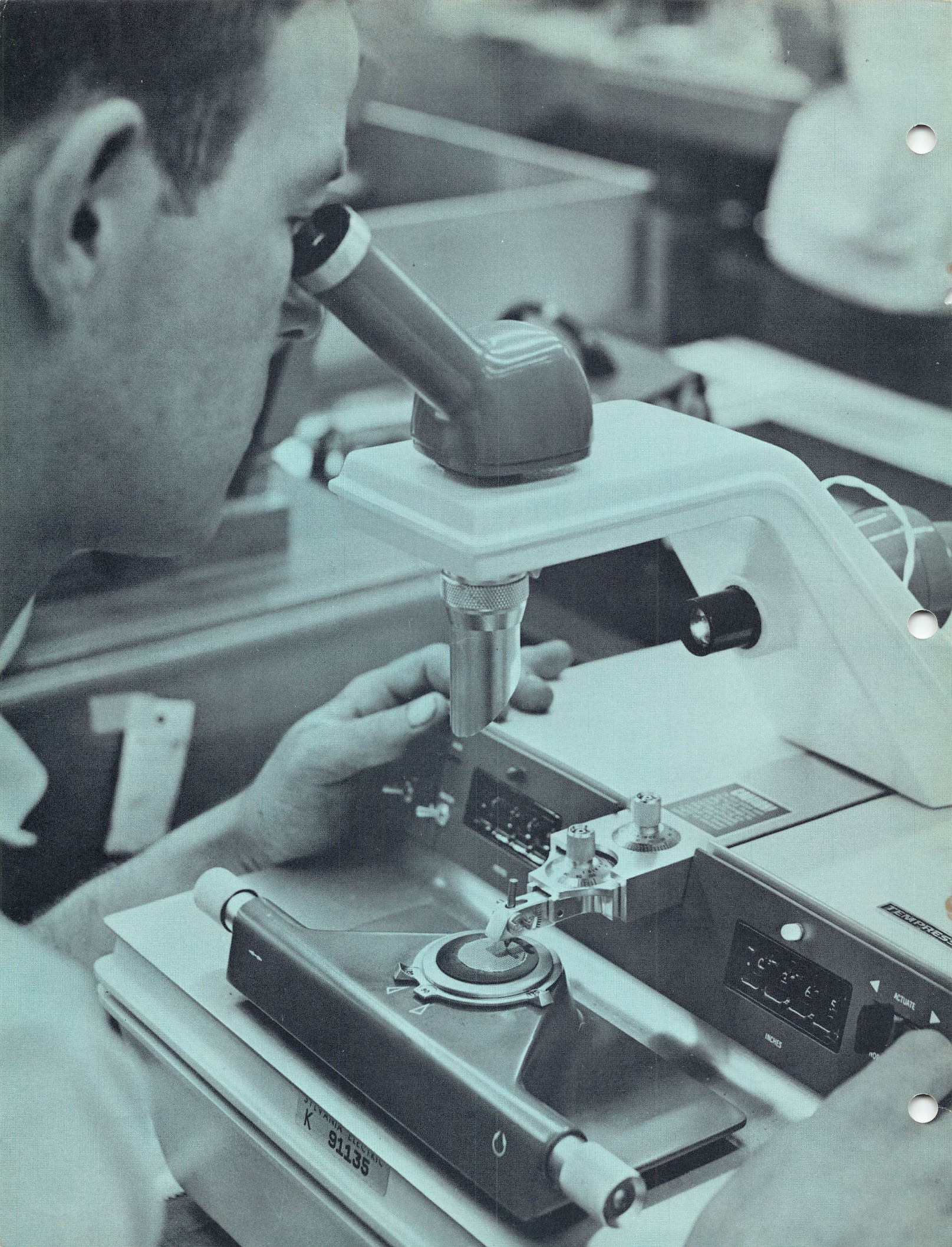
product guide diodes/rectifiers/arrays



SYLVANIA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introduction

The first commercially available semiconductor diode in the industry was developed by Sylvania in 1943—a germanium point contact device that established the semiconductor as an economical and reliable unit. Always a pioneer, Sylvania was among the first to produce these industry breakthroughs: epoxy rectifiers, whiskerless diodes and diode arrays. Sylvania has earned its recognition as a leader resulting from top engineering skill and experience.

Today, Sylvania's modern facilities continue to produce and deliver the highest quality semiconductors to every major market in the industry. All technological manufacturing and production is done in modern facilities devoted exclusively to diode and rectifier manufacturing. These facilities are backed by the Central Engineering resources of the Sylvania Semiconductor Division at Woburn, Massachusetts and other divisions of the Sylvania group.

In this brochure we have detailed the very latest devices included in Sylvania's broad diode and rectifier line. The brochure is also designed to show some of the ways that Sylvania responds to your needs . . . meeting your most rigid demands for quality and uniformity.

(Left) Scribing of dice on a slice.

germanium diodes

Since its creation of the original 1N34 point contact diode, Sylvania has offered a broad line of germanium devices for many applications in the industrial, consumer and military fields. The present line includes both point contact and gold bond structures. The point contacts (DF-2) feature types with low capacitance and high reverse voltages making them ideal for consumer products applications such as various AM, FM and TV detectors as well as switches in industrial equipment.

DF-2

GERMANIUM POINT CONTACT DIODES

Absolute Maximum Ratings at 25°C

Type	Description	Outline	Temp. Range °C	Reverse Working Voltage (dc-volts)	Repetitive Peak F'wd. Current (ma)	Avg. F'wd. Current (ma)	Surge Current 1 Sec. (ma)	Peak Reverse Voltage (volts)	Characteristics Forward Current (ma) at +1 volt Min.	Max.	Reverse Current (ua max)
1N34A	General Purpose	A	—50 to +75	60	150	50	500	75	5		500 at —50v
1N35	Matched Pair	A	—50 to +75	50	60	22.5	200	75	7.5	25	10 at —10v
1N38A	100 Volt Diode	A	—50 to +90	100	150	50	500	120	4	25	500 at —100v
1N38B	100 Volt Diode	A	—55 to +90	100	150	50	500	125	4	25	500 at —100v
1N48	General Purpose	A	—50 to +75	70	150	50	400	85	4		800 @ 50v
1N54A	High Back Res.	A	—55 to +80	50	150	50	500	75	5	25	100 at —50v
1N58A	100 Volt Diode	A	—55 to +70	100	150	40	500	120	5		800 at —100v
1N60	Video Detector	A	—50 to +90	25	150	50	500	30	5	—	66 at —10v
1N63	High Back Res.	A	—55 to +80	100	150	50	400	125	4		50 at —50v
1N64	General Purpose	A	—50 to +90	20	150	150	400	25	3	—	25 @—10v
1N65	70 Volt Diode	A	—50 to +75	70	150	50	400	85	2.5		200 at —50v
1N66	General Purpose	A	—50 to +90	60	150	50	500	70	5	—	800 at —50v
1N67A	80 Volt Diode	A	—50 to +90	80	100	35	500	100	4		50 at —50v
1N68A	100 Volt Diode	A	—50 to +90	100	100	35	500	130	3		625 at —100v
1N69A	60 Volt Diode	A	—55 to +90	60	125	40	400	75	5	25	500 at —50v
1N70A	100 Volt Diode	A	—55 to +90	100	90	30	350	125	3	25	300 at —50v
1N81A	40 Volt Diode	A	—55 to +90	40	90	30	350	50	3	25	10 at —10v
1N87	Video Detector	A	—50 to +75	20	150	50	400	25	.10	.10—.25v @.1ma	30 @ 1.5v
1N90	60 Volt Diode	A	—50 to +75	60	90	30	300	75	5		800 at —50v
1N115	60 Volt Computer	A	—50 to +90	60	150	25	500	70	2.5	—	500 at —50v
1N116	60 Volt Diode	A	—78 to +90	60	150	45	500	75	5		100 at —50v
1N126A	60 Volt Diode	A	—55 to +90	60	90	30	350	75	5	25	850 at —50v
1N127A	100 Volt Diode	A	—55 to +90	100	90	30	300	125	3	25	300 at —50v
1N128	40 Volt Diode	A	—55 to +90	40	90	30	300	50	3		10 at —10v
1N191	90 Volt Computer	A	—78 to +90	70	90	30	300	90	5	—	125 at —50v
1N192	90 Volt Computer	A	—78 to +90	70	90	30	300	90	5		250 at —50v
1N198	High Temperature	A	—55 to +90	80	90	30	300	100	4	25	50 at —50v
1N198A	High Temperature	A	—55 to +90	80	90	30	300	100	4	25	50 at —50v
1N198B	80 Volt Computer	A	—55 to +90	80	90	30	300	100	4	25	50 at —50v
1N294	60 Volt Diode	A	—50 to +100	60	150	50	500	70	5		800 at —50v
1N295	50 Mc Detector	A	—50 to +100	40	125	35	300	50	—	—	180 at —10v
1N297	High Back Res.	A	—50 to +100	80	100	35	500	100	3.5		100 at —50v
**1N541	AM, FM Detector	A	—50 to +60	30	100	30	200	45	4	—	350 @ 45v
1N632	60 Volt Computer	A	—50 to +75	60	45	16	100	90	7.5	—	120 at —60v
1N636	45 Volt Diode	A	—55 to +90	45	90	30	300	60	2.5		10 at —10v
1N805	455 Kc Detector	A	—50 to +90	40	150	35	300	50	3	—	100 at —10v
1N933	80-V Computer	A	—65 to +90	80	90	30	400	100	4	17	80 at —80v

**1N542 no longer produced. Any 2 1N541 will meet 1N542 match spec.

The high forward conduction, rapid switching speed and variety of peak reverse voltages available in the many gold bond types (DF-5) Sylvania manufactures offers the industrial computer designer a device for almost any logic circuit need. This same device versatility and reliability makes the gold bond diode an ideal choice for an almost infinite variety of other industrial, control apparatus and consumer product applications.

DF-5

GERMANIUM GOLD BOND DIODES

			Absolute Maximum Ratings at 25°C						Characteristics		
Type	Description	Outline	Temp. Range °C	Reverse Working Voltage (dc-volts)	Repetitive Peak F'wd. Current (ma)	Avg. F'wd. Current (ma)	Surge Current 1 Sec. (ma)	Peak Reverse Voltage (volts)	Forward Current (ma) at +1 volt Min.		Reverse Current (ua max)
1N96	General Purpose	A	−78 to +90	60	200	30	350	75	20	—	800 @ −50v
1N98	General Purpose	A	−78 to +90	80	200	60	350	100	20	—	100 at −50v
1N98A	High Forward	A	−78 to +90	80	250	70	400	100	40	—	100 at −50v
1N99	General Purpose	A	−78 to +90	80	200	60	350	100	10	—	200 at −80v
1N100	General Purpose	A	−78 to +90	80	200	60	350	100	20	—	50 at −50v
1N100A	High Forward	A	−78 to +90	80	250	70	400	100	40	—	50 at −50v
1N117	General Purpose	A	−78 to +90	60	90	30	250	75	10	—	100 at −50v
1N118	General Purpose	A	−78 to +90	60	200	60	350	75	20	—	100 at −50v
1N118A	High Forward	A	−78 to +90	60	250	70	400	75	40	—	100 at −50v
1N198	High Temperature	A	−55 to +90	80	90	30	300	100	4	—	50 at −50v
*1N270	High Forward—Computer	A	−65 to +90	80	325	90	500	100	200	—	100 at −50v
*1N276	High Forward—Computer (0.3 μs max)	A	−65 to +90	50	150	40	400	100	40	—	100 at −50v
*1N277	High Forward—Computer	A	−65 to +90	100	270	75	400	125	100	—	50 at −50v
1N279	High Forward—Computer	A	−65 to +90	30	300	80	450	35	100	—	200 at −20v
1N281	High Forward—Computer	A	−65 to +90	60	270	75	400	75	100	—	500 at −50v
1N283	General Purpose	A	−65 to +90	20	350	100	500	25	200	—	20 at −10v
1N298	High Back Res.	A	−50 to +100	70	150	50	500	85	30	@ 2.0v	250 at −40v
1N497	General Purpose	A	−50 to +75	20	250	80	400	30	100	—	20 at −20v
1N498	General Purpose	A	−50 to +75	40	250	80	400	60	100	—	25 at −40v
1N500	High Forward	A	−50 to +75	60	250	80	400	80	100	—	40 at −60v
1N631	Computer	A	+10 to +55	60	150	60	400	90	50	—	120 at −60v
1N633	80V—Computer	A	+10 to +55	80	150	60	400	120	125	—	180 at −90v
1N634	100V—Computer	A	−55 to +75	100	200	60	300	115	50	—	100 at −100v
1N635	High Voltage	A	−55 to +75	150	200	60	200	165	50	—	175 at −150v
1N695	High Temperature	A	−78 to +90	20	250	100	400	20	100	—	20 at −10v
1N770	High Forward—Computer	A	−65 to +90	20	200	40	300	30	15	(at−.5v)	40 at −10v
1N949	High Forward—Computer	A	−65 to +100	50	350	100	500	50	10	(.34−.39v)	100 at −50v
1N995	Computer	A	−55 to +100	15	40	30	200	15	10	(at .5v)	10 at −6v
1N996	High Temperature	A	−55 to +100	20	180	50	300	25	.1 40	.25v .8v	15ua @ 15v
1N3125	High Temperature	A	−65 to +90	40	150	30	200	55	5	(at 0.5v)	100 at −40v
*1N3287	High Forward	A	−65 to +90	6	200	50	500	6	100	—	15ua @ 2v
1N3592	High Temperature	A	−55 to +100	25	150	30	200	25	2 15	@ .35v @ .5v	20ua @ 20v
1N4008	General Purpose	A	−65 to +90	12	350	100	500	25	10	@ .5v	100ua @ 20v
1N4524	High Speed Switch	A	−65 to +90	10	350	100	500	10	10	@ .65v	12ua @ 6v

*Types available to Mil spec.

silicon diodes

Slyvania designs and produces silicon devices in three geometries to provide a broad coverage to the many application areas using silicon diodes.

Our silicon alloy junction devices (DF-7) feature high forward conduction, low reverse leakage currents and peak reverse voltages to 400 volts and are especially suitable for industrial control circuitry. The relatively high capacitance of these units is often useful in various timing circuit applications.

For the high speed switching area, Sylvania produces a broad line of Silicon Epitaxial Diffused Diodes. DF-22 is packaged in the JEDEC DO-7 outline and the Sylvania whiskerless diode (DF-31) is packaged in a sub-miniature dual stud design. These feature low capacitance,

DF-22

SILICON EPITAXIAL DIODES

Type	Out-line	Peak Reverse Voltage (Volts.)	Forward Current @ 1.0 V (ma)	MAXIMUM REVERSE CURRENT I_R @ 25°C and V_R (μa)	I_R @ Temp. and V_R (μa)	V_R V	REVERSE RECOVERY Temp.° C	TRR-NS	I_F (ma)	V_R (Volts)	R_L Ω	C_L pf	i_{rr} (ma)	CKT	CAPACITANCE @ V_R (Volts)	(pf)
*IN251	A	30	5	.1	10	10	125	150	5	10	1000	10	.5	JAN 256	—	—
IN252	A	20	10	.1	10	5	125	150	5	10	1000	10	.25	JAN 256	—	—
IN625	A	30	4 @ 1.5 V	1	30	20	100	1000	30	35	—	—	.087	MOD Y	—	—
IN626	A	50	4 @ 1.5 V	1	30	35	100	1000	30	35	—	—	.087	MOD Y	—	—
IN627	A	100	4 @ 1.5 V	1	30	75	100	1000	30	35	—	—	.087	MOD Y	—	—
IN628	A	150	4@ 1.5 V	1	30	125	100	1000	30	35	—	—	.087	MOD Y	—	—
IN629	A	200	4@ 1.5 V	1	30	175	100	1000	30	35	—	—	.087	MOD Y	—	—
IN643A	A	200	100	1	15	100	100	300	5	40	2100	10	.2	JAN 256	10	3
IN658	A	120	100	.05	25	50	150	300	5	40	2000	10	.5	JAN 256	20	1.5
IN659	A	75	6	5	25	60	100	300	30	35	2000	10	.087	JAN 256	—	—
*IN662	A	100	10	1	100	50	100	500	5	40	2300	40	.4	JAN 256	—	—
*IN663	A	100	100	5	50	75	100	500	5	40	2300	40	.4	JAN 256	—	—
IN799	A	120	50	5	30	100	100	500	5	40	2000	10	.2	JAN 256	—	—
IN815	A	15	100 @ 1.5 V	.5	10	5	125	250	5	10	1000	10	.5	JAN 256	0	3.0
IN817	A	200	6 @ 1.5 V	20	100	175	100	1000	30	35	2000	10	.087	MOD Y	10	7
IN903	A	50	10	.1	10	40	100	4	10	5	100	10	1	FIG 11	6	1.0
IN903A	A	50	20	.1	10	40	100	4	10	5	100	10	1	FIG 11	6	1.0
IN904	A	40	10	.1	10	30	100	4	10	5	100	10	1	FIG 11	6	1.0
IN904A	A	40	20	.1	10	30	100	4	10	5	100	10	1	FIG 11	6	1.0
IN905	A	25	10	.1	10	20	100	4	10	5	100	10	1	FIG 11	6	1.0
IN905A	A	25	20	.1	10	20	100	4	10	5	100	10	1	FIG 11	6	1.0
IN906	A	25	10	.1	10	20	100	4	10	5	100	10	1	FIG 11	6	2.5
IN906A	A	25	20	.1	10	20	100	4	10	5	100	10	1	FIG 11	6	2.5
IN907	A	40	10	.1	10	30	100	4	10	5	100	10	1	FIG 11	6	2.5
IN907A	A	40	20	.1	10	30	100	4	10	5	100	10	1	FIG 11	6	2.5
IN908	A	50	10	.1	10	40	100	4	10	5	100	10	1	FIG 11	6	2.5
IN908A	A	50	20	.1	10	40	100	4	10	5	100	10	1	FIG 11	6	2.5
IN914	A	100	10	.025	50	20	150	4	10	6	100	10	1	FIG 11	0	4.0
IN914A	A	100	20	.025	50	20	150	4	10	6	100	10	1	FIG 11	0	4.0
IN914B	A	100	100	.025	50	20	150	4	10	6	100	10	1	FIG 11	0	4.0
IN916	A	100	10	.025	50	20	150	4	10	6	100	10	1	FIG 11	0	2.0
IN916A	A	100	20	.025	50	20	150	4	10	6	100	10	1	FIG 11	0	2.0
IN916B	A	100	30	.025	50	20	150	4	10	6	100	10	1	FIG 11	0	2.0
IN3062	A	75	20	.1	100	50	150	2	10	6	100	10	1	FIG 11	0	1.0
IN3063	A	75	10 @ .85 V	.1	100	50	150	4	10	1	100	10	1	FIG 11	0	2.0
*IN3064	A	75	10	.1	100	50	150	4	10	1	100	10	1	FIG 11	0	2.0
IN3069	A	65	50	.1	100	50	150	50	30	3	100	10	1	FIG 11	0	6.0
IN3070	A	200	100	.1	100	175	150	50	30	3	100	10	1	FIG 11	0	5.0
IN3550	A	190	50	10	500	180	150	1500	20	40	2000	10	.5	JAN 256	—	—
IN3604	A	75	50	.05	50	50	150	4	10	1	100	10	1	FIG 11	0	2.0
IN3605	A	40	20 @ .88 V	.05	50	30	150	4	10	1	100	10	1	FIG 11	0	2.0
IN3669 (400 mw)	A	80	400 @ 1.1 V	.05	—	50	—	200	300	10	50	10	20	FIG 11	10	10.0
IN3731 (400 mw)	A	100	100	.05	50	50	150	3	10	6	100	10	1	FIG 11	0	2.0
IN4009	A	35	30	.1	100	25	150	4	10	1	100	10	1	FIG 11	0	4.0
IN4086 (400 mw)	A	80	200	.25	—	70	—	200	300	10	200	10	5	FIG 11	10	10.0
IN4087	A	70	30 @ .97 V	.09	50	50	150	2.5	10	6	100	10	1	FIG 11	0	1.8
IN4092	A	50	5	1	5	20	70	—	—	—	—	—	—	—	6	10.0
IN4093		Matched pair of 1N4092														

ABSOLUTE MAXIMUM RATINGS

Average Rectified Current, I_o	75 ma	Power Dissipation, P_T	250 mw
Peak Forward Current, I_{PK}	225 max	(400 mw package also available)	
Forward Surge Current (1 sec)	500 ma	Junction Temperature, T_J	−65°C to +175°C

IN4093 MATCHED PAIR OF IN4092 • *Types available to Mil. Spec.

silicon diodes

very fast switching speeds and a range of peak inverse voltages. Although primarily designed for the industrial computer and military aerospace fields, their reliable versatility has led to usage in television and other consumer products.

The third Sylvania construction is the silicon point contact style. This rugged, very low capacitance unit is designed primarily for RF and UHF tuner applications.

DF-31 SILICON EPITAXIAL DUODES

Type	Outline	DO-7 Electrical Equivalent
1N4148	D	IN914
1N4149	D	IN916
1N4151	D	IN3604
1N4152	D	IN3605
1N4153	D	60V IN4152
1N4154	D	IN4009
1N4446	D	IN914A
1N4447	D	IN916A
1N4448	D	IN914B
1N4449	D	IN916B

ABSOLUTE MAXIMUM RATINGS:

Average Rectified Current, Io	75 mA
Peak Forward Current, Ipk	225 mA
Forward Surge Current, (1 sec)	500 mA
Power Dissipation, P_T	500 mw
Junction Temperature, T_J	—65 C to + 175°C

DF-4 24 UHF POINT CONTACT DIODES

SILICON UHF MIXERS

Type	Outline	Maximum Noise Factor Db.	Reverse Working Voltage (dc-volts)	Recurrent Peak Fwd. Current (ma)	Peak Reverse Voltage (volts)	Minimum Fwd. Current @ +.5 volt (ma)	Maximum Reverse @ — 3v (μa)
1N82	B	16	—3	25	—5	5	1000
*1N82A	B	13	—3	25	—5	9	1000
*1N82AG	A	13	—3	25	—5	8	1000

RATINGS:
Temperature Range —50 to +100°C
Frequency —to 1000MC

*Types available to Mil spec.

DF-7 SILICON ALLOY DIODES

Type	Outline	Maximum Peak Reverse (volts)	Forward Current @ 1.0 V (ma)	Maximum Reverse Current I_R @ 25°C and V_R (na)	Maximum Reverse Current I_R at 150°C and V_R (ua)	V_R (volts)
1N456	A	30	40	25	5	25
1N456A	A	30	100	25	5	25
*1N457	A	70	20	25	5	60
1N457A	A	70	100	25	5	60
*1N458	A	150	7	25	5	125
1N458A	A	150	100	25	5	125
*1N459	A	200	3	25	5	175
1N459A	A	200	100	25	5	175
1N461	A	30	15	500	30	25
1N461A	A	30	100	500	30	25
1N462	A	70	5	500	30	60
1N462A	A	70	100	500	30	60
1N463	A	200	1	500	30	175
1N463A	A	200	100	500	30	175
1N464	A	150	3	500	30	125
1N464A	A	150	100	500	30	125
1N482	A	40	100 @ 1.1V	250	30	30
1N482A	A	40	100	25	15	30
1N482B	A	40	100	25	5	30
1N483	A	80	100 @ 1.1V	250	30	60
1N483A	A	80	100	25	15	60
1N483B	A	80	100	25	5	60
1N484	A	150	100 @ 1.1V	250	30	125
1N484A	A	150	100	25	15	125
1N484B	A	150	100	25	5	125
1N485	A	200	100 @ 1.1V	250	30	175
1N485A	A	200	100	25	15	175
1N485B	A	200	100	25	5	175
1N486	A	250	100 @ 1.1V	250	50	225
1N486A	A	250	100	50	25	225
1N486B	A	250	100	50	10	225
1N487	A	330	100 @ 1.1V	250	50	300
1N487A	A	330	100	100	25	300
1N487B	A	330	100	100	10	300
1N488	A	420	100 @ 1.1V	250	50	380
1N488A	A	420	100	100	25	380
1N488B	A	420	100	100	10	380
*1N816	A	10	100	100	10	6
1N881	A	200	50	200		140
D6623	A	70	100	5	2	60
D6623A	A	70	100	1	1	60
D6624	A	150	100	5	2	125
D6624A	A	150	100	1	1	125
D6625	A	200	100	5	2	175
D6625A	A	200	100	1	1	175

ABSOLUTE MAXIMUM RATINGS:

Average Rectified Current, Io	100 ma
Peak Forward Current, Ipk	300 ma
Forward Surge Current (1 sec)	1 AMP
Power Dissipation, P_T	250 mw
Junction Temperature, T_J	—65°C to +175°C

diode arrays

Two basic styles of diode arrays are included in Sylvania's standard line. Molded discrete arrays are made up of two or more individual diodes hermetically sealed in all-glass packages and then molded together in one epoxy package. Monolithic arrays of multiple diodes are available in 3-, 4-, or 5-lead TO-46 cans. This twin approach offers great flexibility in supplying exactly the right device for circuit designers' needs. The diodes in all units are passivated epitaxial types made of silicon for high performance reliability.

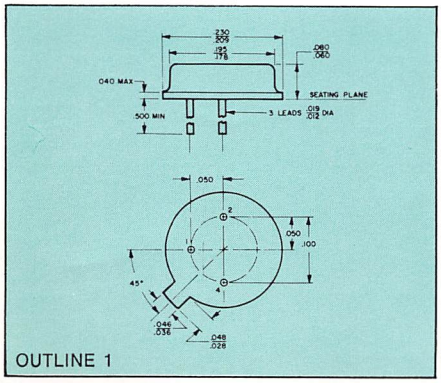
MONOLITHIC DIODE ARRAYS

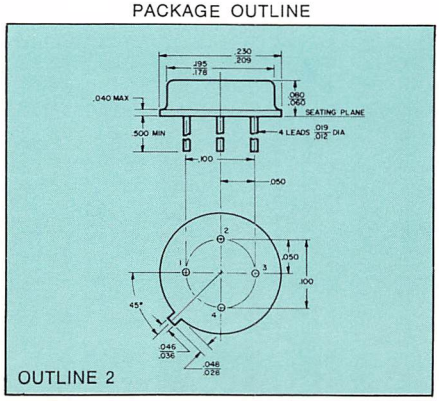
			SINGLE DIODE SPECIFICATIONS AT 25°C								Matching	ABSOLUTE MAX. RATINGS @25°C (EACH DIODE)		
Type No.	Circuit	Outline Drawing	Breakdown Voltage at 10ua	Minimum Forward Current	Maximum Reverse Current at V_R			Capacitance at V_R = 0 vdc f = 1.0 MHz	Reverse Recovery Time (note 4)	Forward Recovery Peak (note 5)	Forward Voltage Match	Average Rectified Current	Peak Forward Surge Current if (surge)	Power Dissipation
			V_{BR} (vdc)	at 1.0 vdc I_F (mA)	I_R (uA) 25°C	I_R (uA) 150°C	V_R (vdc)	C_S (pF)	t_{rr} (nSEC)	V_{FR} (v)	$\triangle V_F$ (mV)	I_O (mA)	(1.0 μsec) (mA)	P_T (mW)
SID2A-1	Fig. 1	1	50	100	.05	50	40	3.5	3.0	2.5	20 (note 1)			
SID2A-2	Fig. 1	1	75	75	.05	50	50	3.0	3.0	2.6	20 (note 1)			
SID2A-3	Fig. 1	1	100	50	.05	50	75	2.5	3.0	2.7	20 (note 1)	75	500	300
SID2A-4	Fig. 1	1	50	20	.05	50	40	3.5	3.0	3.0	20 (note 1)			
SID2A-6	Fig. 1	1	100	100	.05	50	75	2.5	3.0	2.5	20 (note 1)			
SID2B-1	Fig. 2	1	50	20	.10	100	40	5.0	3.0	3.0	20 (note 1)			
SID2B-2	Fig. 2	1	75	75	.10	100	50	4.5	3.0	2.6	20 (note 1)	75	500	300
SID2B-3	Fig. 2	1	50	100	.10	100	40	5.0	3.0	2.5	20 (note 1)			
SID3A-1	Fig. 3	2	50	100	.05	50	40	3.5	3.0	2.5	20 (note 1)			
SID3A-2	Fig. 3	2	75	75	.05	50	50	3.0	3.0	2.6	20 (note 1)			
SID3A-3	Fig. 3	2	100	50	.05	50	75	2.5	3.0	2.7	20 (note 1)	75	500	300
SID3A-4	Fig. 3	2	50	20	.05	50	40	3.5	3.0	3.0	20 (note 1)			
SID3A-6	Fig. 3	2	100	100	.05	50	75	2.5	3.0	2.5	20 (note 1)			
SID3B-1	Fig. 4	2	50	20	.10	100	40	5.0	3.0	3.0	20 (note 1)			
SID3B-2	Fig. 4	2	75	75	.10	100	50	4.5	3.0	2.6	20 (note 1)	75	500	300
SID3B-3	Fig. 4	2	50	100	.10	100	40	5.0	3.0	2.5	20 (note 1)			
SID4A-2	Fig. 5	3	50	100	.05	50	40	4.5	3.0	2.5	20 (note 1)	75	500	300
SID4A-3	Fig. 5	3	75	75	.05	50	50	3.5	3.0	2.6	20 (note 1)			
SID4B-2	Fig. 6	3	50	20	.10	100	40	5.0	3.0	3.0	20 (note 1)	75	500	300
SID4B-3	Fig. 6	3	75	75	.10	100	50	4.5	3.0	2.6	20 (note 1)			
SID4C-2	Fig. 7	2	50	30	.10	100	40	6.0	—	—	20 (note 2)	65	500	150
SID4C-3	Fig. 7	2	75	50	.10	100	50	6.0	—	—	20 (note 2)			
SID4D-1	Fig. 8	2	10 (note 6)	10	—	—	—	—	—	—	5 (note 3)			
SID4D-4	Fig. 8	2	10 (note 6)	10	—	—	—	—	—	—	10 (note 3)	65	500	150
SID4D-5	Fig. 8	2	10 (note 6)	10	—	—	—	—	—	—	20 (note 3)			

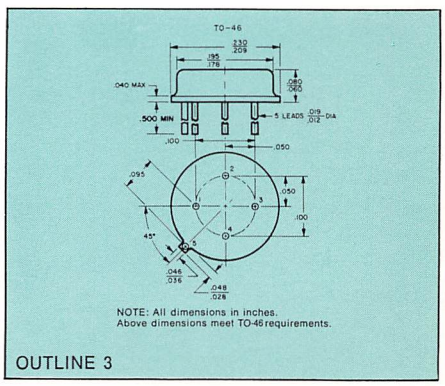
NOTES:

1. Diodes matched over forward current range of 10 mA to 100 mA over temperature range of —55°C to +100°C.
2. Diodes matched at 2 mA at 25°C.
3. Diodes matched at 20 mA at 25°C.
4. Test conditions are V_R=6v, I_F=10 mA, i_{rr}=1 mA, R_L=100Ω
5. Test conditions are 50 mA peak square wave with 20 nSEC rise time, 100 KHz prr.
6. Breakdown Voltage at 100 uA, cannot be checked in final assembly.

PACKAGE OUTLINE







In addition to these standard packages, Sylvania will provide 14-lead flat packs, plug-in packages, and specialty molded packages on special order.

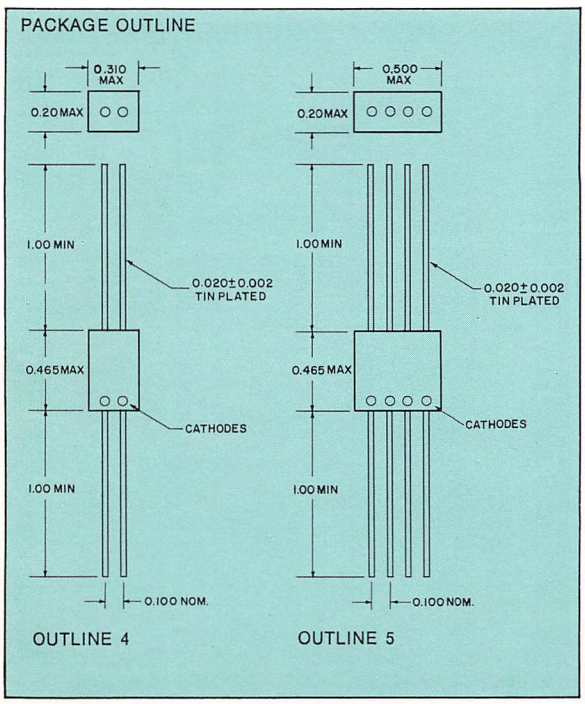
Sylvania's series of molded matched pairs and matched quads are especially rugged. They eliminate handling problems by pre-packaging the diodes to maintain proper polarity and type identification. Epoxy-molded arrays can also be supplied with common cathode, common anode, and various circuit configurations, on a specialty basis.

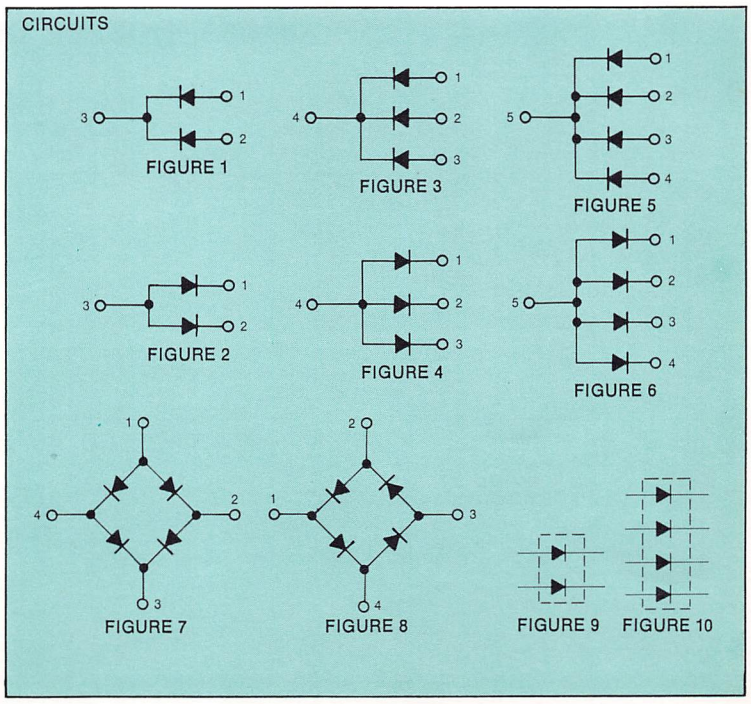
MOLDED DISCRETE DIODE ASSEMBLIES

			SINGLE DIODE SPECIFICATIONS AT 25°C								Matching	ABSOLUTE MAX. RATINGS @25°C (EACH DIODE)		
Type No.	Circuit	Outline Drawing	Breakdown Voltage at 100μA	Minimum Forward Current	Maximum Reverse Current at V_R			Capacitance at V_R = 0 vdc f = 1.0 MHz	Reverse Recovery Time (note5)	Forward Voltage Match	Average Rectified Current	Peak Forward Surge Current if (surge)	Power Dissipation
			V_{BR} (vdc)	at 1.0 vdc I_F (mA)	I_r (uA) 25°C	I_r (uA) 150°C	V_R (vdc)	C_S (pF)	t_{rr} (nSEC)	$\triangle V_F$ (mV)	I_O (mA)	(1.0 μsec) (mA)	P_T (mW)
M9312	Fig. 9	4	150	200	.001	1.0	125	15	—	15 (note 1)	200	1.0	300
M9314	Fig. 9	4	150	200	.001	1.0	125	15	—	30 (note 2)			
M9317	Fig. 10	5	150	200	.001	1.0	125	15	—	15 (note 1)	200	1.0	300
M9319	Fig. 10	5	150	200	.001	1.0	125	15	—	30 (note 2)			
M9731	Fig. 9	4	100	100	.10	100	80	2	20	10 (note 3)	100	0.8	400
M9732	Fig. 9	4	100	100	.10	100	80	2	20	15 (note 1)			
M9741	Fig. 9	4	50	100	.10	100	40	2	20	10 (note 3)			
M9742	Fig. 9	4	50	100	.10	100	40	2	20	15 (note 1)			
M9736	Fig. 10	5	100	100	.10	100	80	2	20	10 (note 3)	100	0.8	400
M9737	Fig. 10	5	100	100	.10	100	80	2	20	15 (note 1)			
M9746	Fig. 10	5	50	100	.10	100	40	2	20	10 (note 3)			
M9747	Fig. 10	5	50	100	.10	100	40	2	20	15 (note 1)			
M9328	Fig. 7		50 @ 10uA	30	.10	—	40	—	—	20 (note 4)	65	0.5	250
M9329	Fig. 7		75 @ 10uA	50	.10	—	50	—	—	20 (note 4)			
M9330	Fig. 8		30 @ 10uA	50	—	—	—	—	—	20 (note 4)	65	0.5	250

NOTES:

1. Diodes matched over forward current range of 2 mA to 5 mA over temperature range of —55°C to +125°C.
2. Diodes matched over forward current range of 10 mA to 25 mA over temperature range of —55°C to +125°C.
3. Diodes matched over forward current range of 150 uA to 2 mA over temperature range of —55°C to +125°C.
4. Diodes matched at 2 mA at 25°C.
5. Test conditions are I_F=30 mA, I_R=30 mA, i_{rr}=3.0 mA.





silicon diffused rectifiers

Sylvania manufactures a high quality line of 1.0 ampere rectifiers which are packaged in both the well known epoxy molded configuration and the new all glass, hermetically sealed DO-29 outline. The basic junctions of both lines are made by a double diffused process which yields units with reverse voltage ratings to 1000 volts. A unique junction design insures low reverse leakage currents and gives the ability to withstand reverse transient voltages far in excess of their PIV ratings.

The broad lines in both packages make these rectifiers particularly suitable for use in military and industrial applications in communications, computer and aerospace equipment as well as in commercial household and automotive application.

DF-26

SILICON DOUBLE DIFFUSED GLASS RECTIFIERS

Type	Outline	Peak Reverse Voltage (Volts)	RMS Input Voltage (Volts)	Max. DC Fwd. Voltage Drop @ 1.0 A (Volts)	Dynamic Fwd. Voltage V_F (Full Cycle Avg.) @ 1.0 A @ PRV @ Temp. °C (Volts)	Max. DC Rev. Current @ PRV (μa)	Max. DC Rev. Current @ PRV @ 175°C (μa)	Dynamic Rev. Current Ia (Full Cycle Avg.) @ PRV (μa)
1N4383	C	200	140	1.0	1.3 @ 100°C	10	500	275
1N4384	C	400	280	1.0	1.3 @ 100°C	10	500	250
1N4385	C	600	420	1.0	1.3 @ 100°C	10	500	225
1N4585	C	800	560	1.0	1.3 @ 50°C	10	500	200
1N4586	C	1000	700	1.0	1.3 @ 50°C	10	500	200

ABSOLUTE MAXIMUM RATINGS AT 25°C:	IN4383	IN4384	IN4385	IN4585	IN4586	
Average Forward Current, I_O (+50°C)	1.0	1.0	1.0	1.0	1.0	amp
Average Forward Current, I_O (+100°C)	1.0	1.0	1.0	0.6	0.6	amp
Average Forward Current, I_O (+150°C)	0.3	0.3	0.3	0.2	0.2	amp
Forward Surge Current, I_F (surge) 1 cycle, F=60 cps	50	50	50	50	50	amps
Forward Surge Current, I_F (surge) recurrent, F=60 cps	6	6	6	6	6	amps
Operating Temperature, T_J	(—65°C to +175°C — all types)					
Soldering Lead Temperature—⅛" from body	(260°C for 10 seconds) max.					
Thermal Time Constant (Junction to leads), $T_{J\text{-}L}$				80 ms.	typical	
Thermal Time Constant (Junction to free air), $T_{J\text{-}A}$				10 sec.	typical	
Thermal Resistance (Junction to free air), R_{TH}	148°C/watt typical (⅞" lead length)					
	138°C/watt typical (⅝" lead length)					
	118°C/watt typical (⅜" lead length)					
	90°C/watt typical (⅛" lead length)					

DF-27

SILICON DOUBLE DIFFUSED EPOXY RECTIFIERS

Type	Outline	Peak Reverse Voltage	RMS Input Voltage	Max. DC Forward Voltage Drop 500ma	750ma	1000ma	Max. DC Rev. Current @ PRV μa	Max. Rev. at 100°C DC-μa	Current at PRV AC-μa
1N2069	E	200	140	1.2			10		200
1N2069A	E	200	140	1.0			5		50
1N2070	E	400	280	1.2			10		200
1N2070A	E	400	280	1.0			5		50
1N2071	E	600	420	1.2			10		200
1N2071A	E	600	420	1.0			5		50
1N3277	E	200	140		1.2		5		
1N2482	E	200	140		1.0		100		
1N2483	E	400	280		1.0		100		
1N2484	E	600	420		1.0		100		
CONTROLLED AVALANCHE									
SR6587	E	200	140			1.0	1	50	
SR6588	E	400	280			1.0	1	50	
SR6589	E	600	420			1.0	1	50	
SR6590	E	800	560			1.0	1	50	
SR6591	E	1000	710			1.0	1	50	

ABSOLUTE MAXIMUM RATINGS AT 25°C:

Average Forward Current, Io — 1.0 amp
Forward Recurrent Surge Current, I_F (Surge) –20 AMP
Forward Non-Recurrent Surge Current, I_F (Surge) –80 AMP
Operating Temperature, T_{OPR} — –35°C to +150°C

quality assurance

High quality, consistently uniform, competitively market-priced diodes don't just happen . . . they are the result of a conscientious program carried out by skilled people who take pride in their work—*Sylvania's Quality Control Group.*

Inspection

Independent of manufacturing and engineering, quality assurance has a separate facility for control of incoming material, in-process inspection and final lot evaluation of all products . . . assuring checks at *every* stage of the manufacturing cycle.

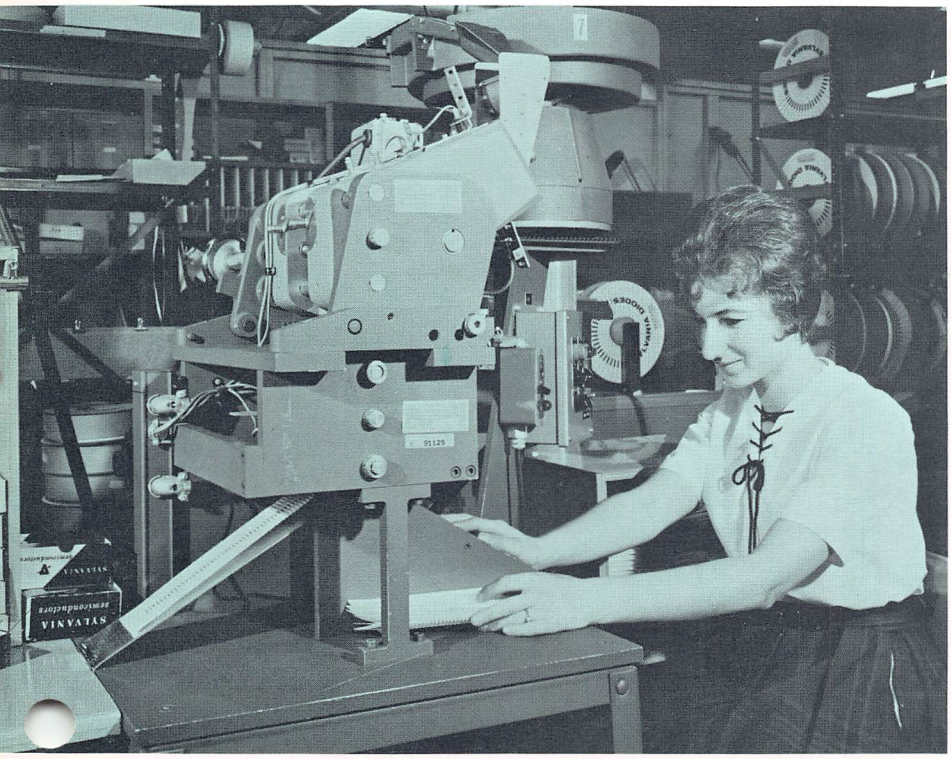
After lot formation, the Quality Control Group performs lot sampling tests on both electrical characteristics and life and design parameters to applicable specs. In the absence of customer specifications, Sylvania sets family criteria that is compatible with state-of-the-art and industry standards.

Test series include 1,000-hour operating life, 1,000-hour storage life, vibration, constant acceleration, hermeticity and other tests normally included on MIL and high reliability specifications.

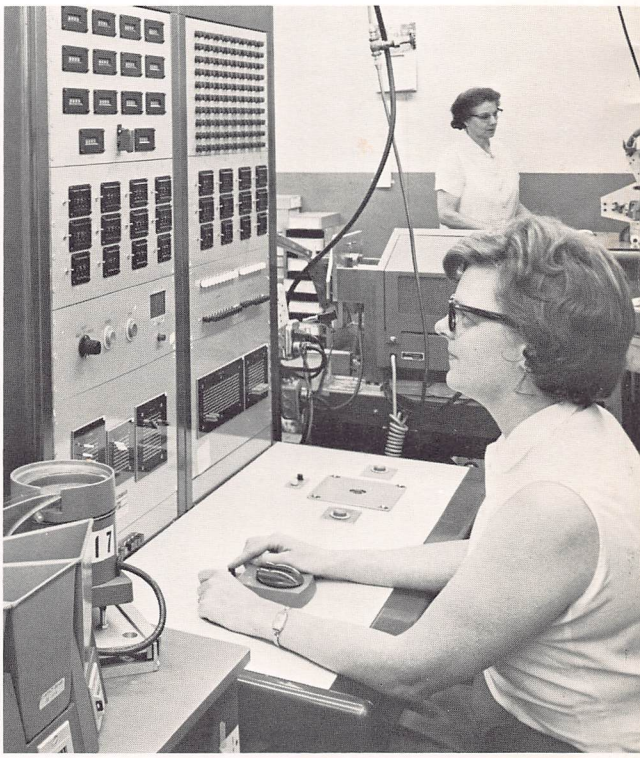
marketing

The first line of personal communication between Sylvania and you is the Sylvania sales engineer. Behind him stands an impressive force of marketing and engineering assistance plus the latest in circuit applications and performance data. The liaison between field representative and home office assures you of the semiconductor devices you need . . . when and where you need them.

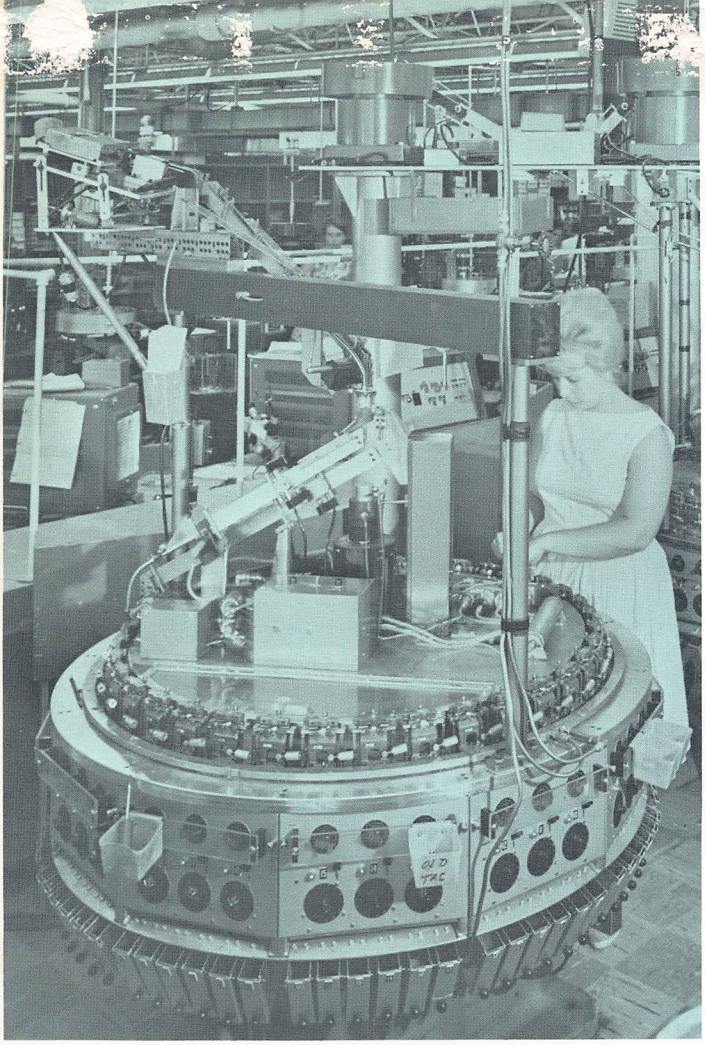
SYLVANIA meets its responsibilities to today's market with tomorrow's technology!



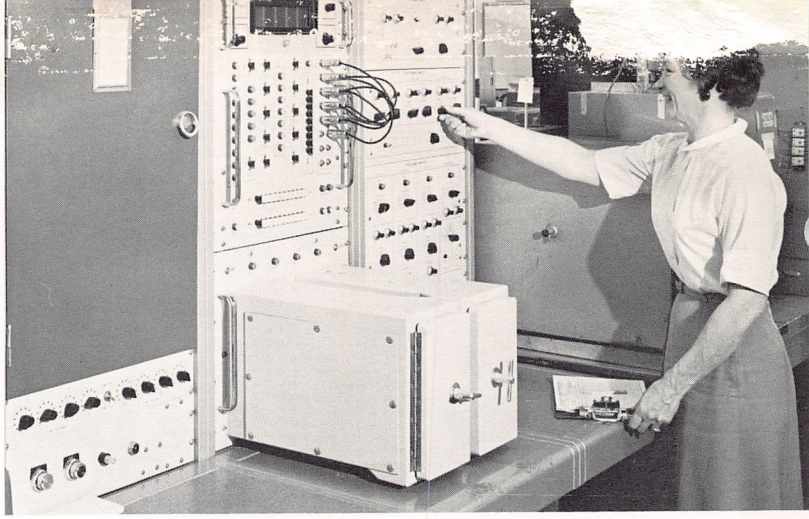
Packing machine is used to place diodes in the final shipping container. It also straightens leads, insures accurate counts and places diodes on easy-to-use plastic supports.



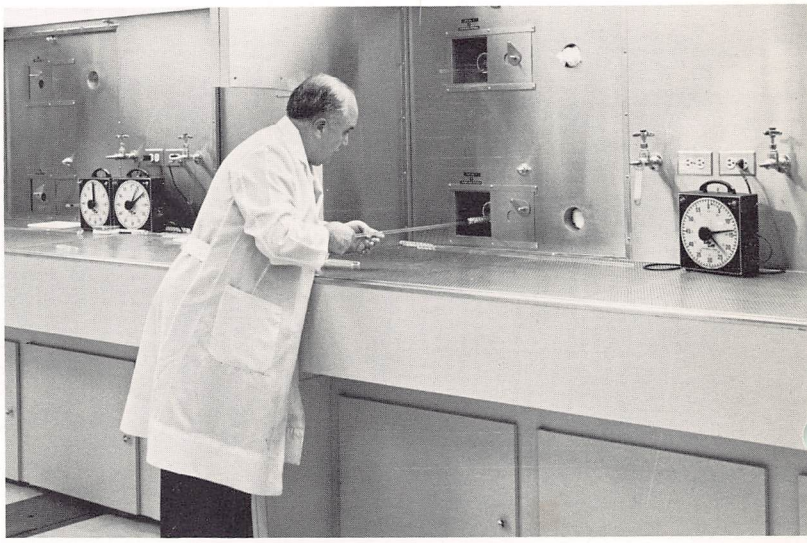
One of many multi-parameter test kits that can automatically test for a wide variety of diode parameters and at high volume production rates.



Modern machinery used for final assembly and sealing of glass packaged diodes. This precision equipment assures hermetic seals and uniform distributions of product parameters at high volume production rates.



A part of the Life and Design Test Section of Quality Assurance Group indicating equipment for testing diodes while undergoing various life test environments.



Diffusion furnace area (exterior). Here laminar flow hoods are employed to assure scrupulously clean conditions at this critical manufacturing step.

A view of a portion of the Quality Assurance Department where final sampling tests are being made on reels of finished diodes before final packaging.

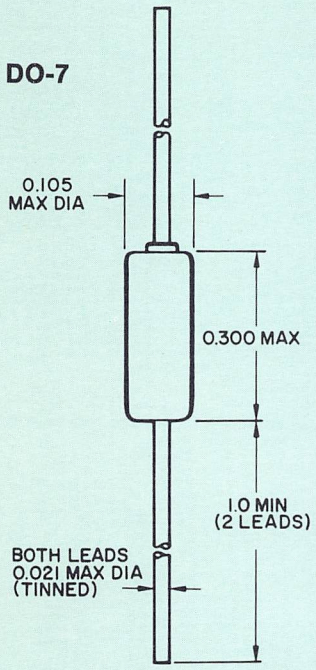
NEW PRODUCTS FROM SYLVANIA

- Whiskerless Diodes
- Schottky Diodes.
- Diode Arrays with higher diode counts and circuit layouts.
- Miniature Glass Rectifiers.

package outlines diodes/rectifiers

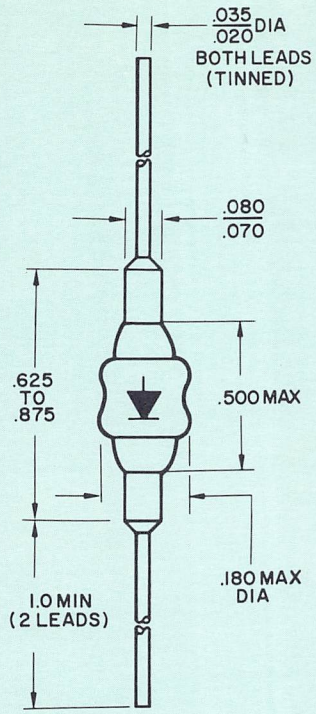
OUTLINE A

DO-7



Marking: Color bands adjacent to cathode ends.

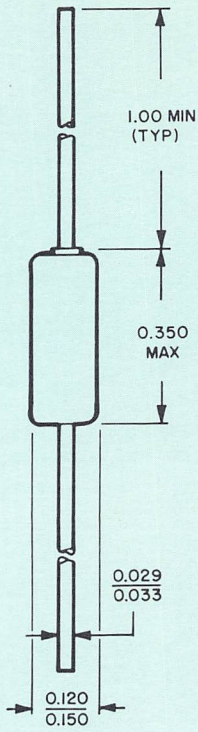
OUTLINE B



All dimensions in inches marking; Bar of graphic symbol denotes cathode.

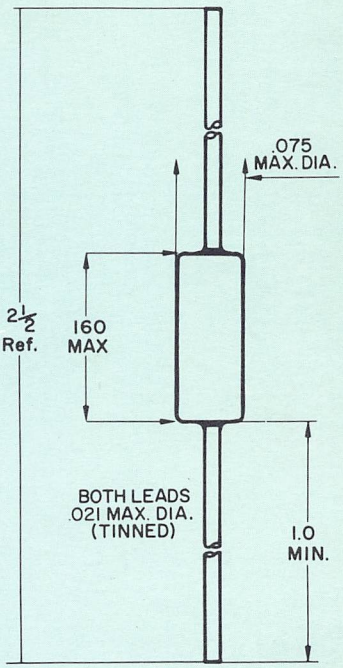
OUTLINE C

DO-29



Marking: Color bands adjacent to cathode ends.

OUTLINE D



Marking: Color bands adjacent to cathode ends.

OUTLINE E

DO-27

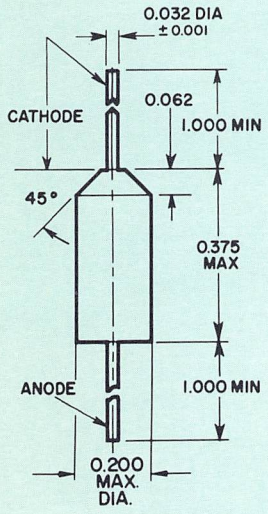


FIGURE 11

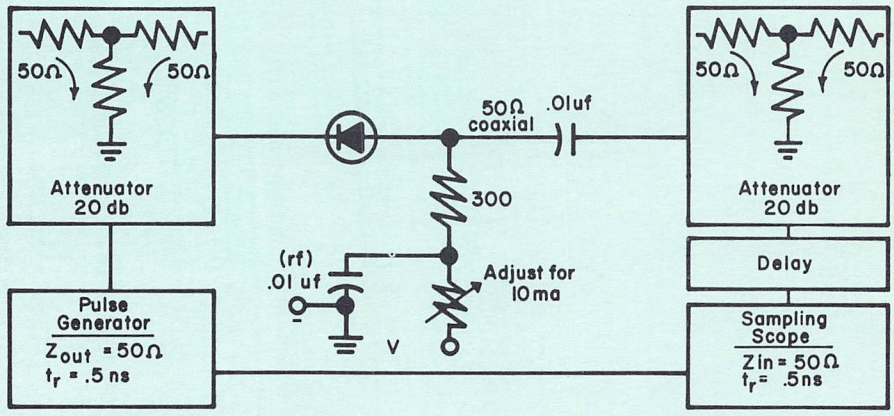


FIG. 11—Reverse Recovery Time is measured from the time the diode current transient passes through zero, when a forward current of 10 ma is switched to a reverse voltage of 1.0 volt (6 volts) for cond. 2) to the time the reverse current transient declines to 1 ma per circuit 1. High freq. loop resistance = 100 ohms (approx.).

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Title:. . . . . .

Company:. . . . . .

Address: Street:. . . . . .

City:. . . . . .

State:. . . . . .

Telephone No. . . . . Ext.. . . . . .

STATUS OF REQUIREMENTS

1. Firm ☐ Bid ☐

2. Usage: . . . . per week, month or year.

3. Estimated start date:. . . . . .

4. Quote required by:. . . . . .

5. Quote quantities:. . . . . .

6. Price goal: . . . . . .per junction.

TYPE OF CONSTRUCTION

1. Molded, discrete diode ☐
2. Potted, discrete diode ☐
3. Monolithic ☐
4. Multi-chip ☐
5. Other ☐Describe:

6. Material: Silicon ☐; Germanium ☐

PACKAGING INFORMATION

1. If discrete diode, potted or molded.
   (a) Welded interconnections ☐
   (b) Soldered interconnections ☐
   (c) Other ☐Describe:

   (d) Mechanical: (Sketch on back of form if desired)
      1. Max. Size:
      2. Type of terminals:
      3. Terminal arrangement:
      4. Mounting provisions:
   (e) Other packaging requirements:

2. If monolithic or multi-chip:
   (a) TO can ☐; Specify type:. . . . . .
   (b) Flat pack ☐
   (c) Dual in line plug in package ☐
   (d) Terminal arrangement:
   (e) Other packaging requirements:

ELECTRICAL

1. Application:
2. Circuit: (Sketch on back of form if desired):
3. Individual diode characteristics at 25°C:
   (a) Max. forward voltage, Vf: . . . . . .V at . . . . . mA
   (b) Max. inverse current, Ir: . . . . . .uA at. V
   (c) Max. inverse current,
      Ir: . . . . . .uA at. . . . . V at . . . . . .°C
   (d) Peak inverse voltage, PIV: . . . . . .V at . . . . . .uA
   (e) Capacitance, Cs: . . . . . .pf at . . . . . V, f - . . . . . .
   (f) Reverse recovery, trr: . . . . . .nsec
      1. Test conditions:

   (g) Forward recovery, Vfr: V
      1. Test conditions:

   (h) Forward voltage match, $\triangle$Vf: . . . . . .mV
      1. Test conditions:

   (i) Other specifications:

OPERATING AND STORAGE CONDITIONS

1. Temperature range:
   (a) Operating:
   (b) Storage:
2. Shock:
3. Vibration:
4. Constant acceleration:
5. Barometric pressure:
6. Salt spray:
7. Moisture resistance:
8. Other conditions:

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